

In the Claims:

~~Please cancel claims 1-21 without prejudice or disclaimer.~~

Please add new claims 34-53 as follows:

2020-2015667

34. (New) Ammunition in combination with a discharging apparatus for firing such ammunition wherein:

the discharging apparatus comprises:

a chamber for receiving the ammunition;

a muzzle; and

a barrel between the chamber and the muzzle; and

the ammunition extends from a rear end to a front end and comprises:

a metallic case that:

extends aft-to-fore from a base at the ammunition rear end to a mouth;

has interior and exterior surfaces;

has a central longitudinal channel extending forward from a primer pocket portion at the base to a fore portion proximate the mouth; and

has a length and diameter effective to be initially accommodated within the chamber and then, after firing, to be driven forward into the barrel and discharged therefrom by such firing of a subsequent similar ammunition;

a cover formed of polymeric resin and extending from a rear rim to a front end at the ammunition front end and having a mass not in excess of a mass of the case and having interior and exterior surfaces;

a primer mounted within the primer pocket; and

a propellant charge confined within a volume at least partially defined by the central longitudinal channel and the cover interior surface.

35. (New) Ammunition in combination with a discharging apparatus for firing such ammunition wherein:

the discharging apparatus comprises:

a chamber for receiving the ammunition;

a muzzle; and

a barrel between the chamber and the muzzle; and

the ammunition extends from a rear end to a front end and comprises:

a metallic case that extends aft-to-fore from a base at the ammunition rear end to a mouth and has interior and exterior surfaces, the metallic case having a case length and diameter effective to be initially accommodated within the chamber and then, after firing,

to be driven forward into the barrel and discharged therefrom by such firing of a subsequent similar ammunition;

a cover formed of polymeric resin and extending from a rear rim to a front end at the ammunition front end and having a cover length greater than the case length having a mass not in excess of a mass of the case and having interior and exterior surfaces; and

a propellant charge confined within a volume at least partially defined by a combination of said case and said cover.

36. (New) The combination of claim 35 wherein:

the cover consists essentially of injection molded high density polyethylene; and the case consists essentially of die cast zinc or zinc alloy.

37. (New) Ammunition in combination with a discharging apparatus for firing such ammunition wherein:

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the discharging apparatus comprises:

a chamber for receiving the ammunition;

a muzzle; and

a barrel between the chamber and the muzzle; and

the ammunition extends from a rear end to a front end and comprises:

a metallic case that extends aft-to-fore from a base at the ammunition rear end to a mouth and has interior and exterior surfaces, the metallic case having a length and diameter effective to be initially accommodated within the chamber and then, after firing, to be driven forward into the barrel and discharged therefrom by such firing of a subsequent similar ammunition;

a cover formed of polymeric resin and extending from a rear rim to a front end at the ammunition front end and having a mass not in excess of a mass of the case and having interior and exterior surfaces, the cover interior surface having a circumferential recess forward of the case and effective to locally weaken the cover sufficiently to permit internal pressure within the cover to sever a portion ahead of the recess from a portion behind the recess while the portion behind remains attached to the case when the ammunition is fired; and

a propellant charge confined within a volume at least partially defined by a combination of said case and said cover.

38. (New) The combination of claim 37 wherein the circumferential recess:

has a longitudinal extent of between 1mm and 5mm; and  
locally thins the cover to a minimum thickness of between 0.6mm and 1.4mm from an adjacent thickness of between 1.6mm and 2.6mm.

39. (New) Ammunition for use with a discharging apparatus that includes a chamber for receiving the ammunition, a muzzle and a barrel between the chamber and the muzzle, the ammunition comprising:

a case formed of a cast zinc or a cast zinc-based alloy that extends aft-to-fore from a base to a mouth and has interior and exterior surfaces;  
a propellant charge contained within the case;  
a primer mounted in the case; and  
a member cooperating with the case to enclose the propellant charge, said ammunition lacking a projectile having a mass in excess of a mass of the case. V&I

40. (New) The ammunition of claim 39 wherein:

the primer is a #209 primer; and  
the case has a mass of between 70g and 100g and a maximum diameter of between 20mm and 26mm.

41. (New) The ammunition of claim 39 wherein the member is a cap extending from a rear rim to a front end and having a rear portion encircling a fore portion of the case.

42. (New) The ammunition of claim 41 wherein:

the cap is formed of a resinous polymer;  
the case fore portion includes a flange having an external flange diameter;  
the cap rear portion includes an inwardly directed part aft of the flange and having an internal diameter less than the flange diameter so as to cooperate with the flange to resist forward translation of the cap relative to the flange; and  
a cap length is between 100% and 300% of a case length.

43. (New) In an ammunition round for use with a discharging apparatus that includes a chamber for receiving the ammunition, a muzzle and a barrel between the chamber and the muzzle, the ammunition of the type wherein the case of one round fired by the apparatus serves as a

projectile expelled by ignition of the propellant charge contained within the case of the next round, the improvement wherein:

the case is formed of a cast zinc or a cast zinc-based alloy that extends aft-to-fore from a base to a mouth and has interior and exterior surfaces;

the primer is mounted in the case; and

a member cooperates with the case to enclose the propellant charge

the case exterior surface has a plurality of interspersed circumferential grooves and ribs, the ribs having a diameter effective to engage rifling of the barrel.

44. (New) The ammunition of claim 43 wherein there are at least eight said grooves occupying a total of at least about 25% of a length of the case.

45. (New) The ammunition of claim 43 wherein the plurality of grooves have widths of between 0.9mm and 1.8mm peak depths of between 0.08mm and 0.30mm from a maximum case diameter and, along with said ribs extend along at least 70% of the case length.

46. (New) The ammunition of claim 45 wherein said peak depths are between 0.13mm and 0.23mm and said interspersed ungrooved areas have diameters within 0.05mm of the maximum case diameter.

47. (New) The ammunition of claim 45 in combination with an industrial ballistic tool barrel having rifling with a land-to-land diameter which is 0.943-0.950in. and a groove-to-groove diameter which is 0.954-0.960in.

48. (New) The ammunition of claim 45 wherein the case exterior surface has circumferential extractor groove having a depth of at least 1mm and separated by no more than 2mm from an aft extremity of the case.

49. (New) The ammunition of claim 43 wherein the member is a cap extending from a rear rim to a front end and having a rear portion encircling a fore portion of the case.

50. (New) The ammunition of claim 49 wherein:

the cap is formed of a resinous polymer;

the case fore portion includes a flange having an external flange diameter;

the cap rear portion includes an inwardly directed part aft of the flange and having an internal diameter less than the flange diameter so as to cooperate with the flange to resist forward translation of the cap relative to the flange; and

a cap length is between 100% and 300% of a case length.

51. (New) The ammunition of claim 50 wherein:

there is a first radial clearance of at least 1.0 mm between the flange and the cap; and

there is a second radial clearance of between interference fit and 0.5 mm between the cap inwardly directed part and a neck portion of the case aft of the flange.

52. (New) The ammunition of claim 43 wherein the member is a cover having a reduced thickness portion effective so that upon the firing of the propellant charge of a given round a first portion of the cover ahead of the reduced thickness portion will be severed from a second portion aft of the reduced thickness portion and travel behind the spent case of the prior ammunition round.

53. (New) The ammunition of claim 43 wherein the primer is a #209 primer press fit within a head portion of the cast zinc or cast zinc-based alloy case.